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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,083	06/28/2001	Petruzzello John	US 010320	5332

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EXAMINER

SEFER, AHMED N

ART UNIT PAPER NUMBER

2826

DATE MAILED: 05/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/894,083

Applicant(s)

JOHN ET AL.

Examiner

A. Sefer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,6-9,15,16 and 19-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15 and 16 is/are allowed.
- 6) ☒ Claim(s) 1,6-9 and 19-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. The amendment filed on 2/24/03 has been entered. Claims 2 and 3 have been cancelled and new claims 19-21 have been added.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 6 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Yanagawa (JP 2000-114266).

Yanagawa discloses in figs. 1 and 2 a hybrid semiconductor device, comprising a first portion (fig. 1b) the first portion being relatively resistant to breakdown voltage; the first portion comprising a MOS transistor or NMOS (as in claim 9); and a second portion (fig. 1a) being less resistant to breakdown voltage and able to survive breakdown without device failure, the second portion residing adjacent the first portion and comprising a diode, wherein the diode has an identical structure as MOS transistor, except for a source region.

As to claim 6, Yanagawa discloses breakdown occurs at a higher voltage in the first portion, and at a lower voltage in the second portion.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagawa in view of Han et al. US Patent No. 5,907,181.

Yanagawa discloses the device structure as recited in the claim, but does not specifically teach a breakdown voltage due to a difference in field plate length.

Han et al disclose in figs. 1 and 6 a conductor M'3 extended over a dielectric layer 2 forming a field plate with different lengths thereby affecting the breakdown voltage.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teachings of Han et al with Yanagawa's device, since varying the length of the field plate would achieve a desired breakdown voltage.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagawa in view of Letavic et al. US Patent No. 5,969,387.

Yanagawa discloses the device structure as recited in the claim including an SOI structure, but does not specifically disclose LDMOS.

Letavic et al disclose (see figs. 1-3 and abstract) a SOI-LDMOS that includes a MOSFET provided in a thin semiconductor film on a thin buried oxide.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teachings of Letavic et al with the device of Yanagawa, since that

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would enhance the high-voltage and high-current performance parameters of the SOI power device.

7. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagawa in view of Han et al. US Patent No. 5,907,181.

Yanagawa discloses in figs. 1 and 2 a hybrid semiconductor device, comprising a first portion (fig. 1b) being relatively resistant to breakdown; and a second portion (fig. 1a) being less resistant to breakdown; wherein breakdown occurs at a higher voltage in the first portion than in the second portion, but does not specifically teach a breakdown voltage due to a difference in field plate length.

Han et al disclose in figs. 1 and 6 a conductor M'3 extended over a dielectric layer 2 forming a field plate affecting the breakdown voltage.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teachings of Han et al with Yanagawa's device, since varying the length of the field plate would achieve a desired breakdown voltage.

8. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagawa in view of Han et al as applied to claim 19 above, and further in view of Letavic et al.

The combined references disclose the device structure recited in the claim including an SOI structure, but fail to teach a SOI-LDMOS.

Letavic et al disclose (see figs. 1-3 and abstract) a SOI-LDMOS which includes a MOSFET or NMOS (as in claim 21) provided in a thin semiconductor film on a thin buried oxide.

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Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the teachings of Letavic et al, since that would enhance the high-voltage and high-current performance parameters of the SOI power device.

Allowable Subject Matter

9. Claims 15 and 16 are allowed.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yun et al US ref. 6,348,716 disclose in fig. 15a MOS device including a field plate with a plurality diodes having relatively low breakdown voltage.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (703) 605-1227.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601.

ANS
April 27, 2003

NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

